GEOGRAPHIC NEWS BULLETINS

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Contents for Week of April 7, 1930. Vol. IX. No. 7.

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THIS KASHMIR PUPIL'S PEN IS A STALK OF INDIAN CORN, HIS INK IS CHALK AND WATER

(See Bulletin No. 1)

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Gandhi Marches to the Sea Through Baroda

A TWENTIETH century march to the sea is under way in India.

Gandhi has announced his intention to march with his followers from Ahmadabad to the Gulf of Cambay. Upon their arrival at the Gulf Gandhi and his companions plan to make salt from sea water, an act which is illegal according to the terms of the government salt monopoly.

The march is not a long one; it is only 170 miles from Ahmadabad to Jalalpur near the ocean, but the route will take them through Baroda, one of the largest and wealthiest native states of India. Dispatches report the movement of troops to Baroda to meet any emergency.

Modern City Planning Evident in Ancient Baroda

Baroda City, the capital of the state, lies about 250 miles north of Bombay. It is the residence of one of India's most illustrious native princes, the Gaekwar of Baroda, and also is an important railroad junction and commercial center. The railroad from Bombay to Delhi passes through Baroda, and other lines penetrate the fertile farming regions in the neighborhood.

Baroda has some of the finest cotton lands in India. Rice, wheat, sugar and other commodities flourish in the highly productive alluvial soil. The well-kept farms with their hedges and trees, which surround the city, give the landscape the appearance of a large English park.

The city proper is inclosed in the walls of an old fort with gates at frequent intervals. Approaching the city from the railroad, which is in a new section, one is impressed with the accomplishments of modern city planning. At first the road is broad and straight and one can imagine oneself on the boulevard of a European capital, except for the endless swarm of Hindus. Then, as the gate is reached, the picture changes—an oriental city with narrow, tortuous streets. However, even Baroda's old section has been improved during the last decade. A reservoir and filtration plant furnish pure water, a sewer system has been constructed, some streets and roads have been widened, and many of the old, dilapidated buildings have been replaced. The streets are kept clean and are well lighted at night.

A Special Palace Houses the Gaekwar's Jewels

Numerous huge temples that pierce the skyline indicate that Baroda is a Hindu stronghold. Nearly four-fifths of the 103,000 inhabitants are Hindus.

Leading from the Laharipura, or western gate, a wide thoroughfare runs through the city. It is fringed with wards, the gates of which are heavily barred against outsiders. Each ward is set aside for a separate caste or class in true oriental fashion.

Near the eastern end of the thoroughfare is the Nazar Bagh, a white stucco palace which is the depository for the jewels of the Gaekwar. They are said to be worth about $10,000,000. Among them is a diamond necklace containing the famous "Star of the South" diamond, a brilliant stone weighing 125 carats. Another prize of the collection is a cloth embroidered with precious stones and seed pearls. It was made to cover the tomb of Mohammed.

Four miles south of the city is Makarpura palace, summer residence of the Gaekwar, noted for its beautiful gardens, fountains, grottoes and pergolas. The third of the ruler's residences, and the principal one, is Lakshmi Vilas. This build-

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WHEN THE KASHMIR SHAWL WENT OUT OF FASHION, THE KASHMIR CARPET TOOK ITS PLACE

The finished rug of excellent quality and design has just been taken from the loom. Almost the entire output of this concern goes to a Chicago store. In Kashmir the dyes are good, and the finest wool is obtainable, much of the *pashm* (the soft under wool of the Tibetan goat) formerly used for shawls now being used as a basis for the best grades of carpets. Many of the old shawl weavers now exercise their skill upon these newer products.

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Admiral Byrd Tells The Society of Weather Studies in Antarctic

AMONG the major contributions to science Rear Admiral Richard E. Byrd expects from his Antarctic Expedition are those relating to meteorological observations, the explorer has indicated in a radio message to the National Geographic Society.

The vast continent which is "the home of the blizzard" long has been regarded as a "weather breeder" for continental and island areas in the southern hemisphere, including southern South America, South Africa, Australia and New Zealand. But it hitherto has been the world's "weather blind spot" from lack of any sustained observations of its temperatures, barometric pressures, study of its land-level and altitude air currents, and similar data which are the raw materials of weather prediction.

Rare Good Flying Day Picked by Weather Experts

Rear Admiral Byrd's message, transmitted through the *New York Times* radio station, was addressed to Dr. John Oliver La Gorce, vice-president of the National Geographic Society, since it was for Dr. La Gorce that Byrd named the expedition's meteorological station. The explorer tells how the station's observations were used in determining the time of flights and also the methods by which he has been collecting meteorological data for permanent scientific records. The message read:

"So great has been the contribution of the La Gorce meteorological station to the success of our flights of exploration that I feel it my duty as well as my pleasure to report the facts.

"We dug our airplanes from under the snow in the spring as soon as the temperatures would permit. Shortly thereafter, on November 18, our weather men, Haines and Harrison, reported to me that they thought the weather was suitable for the base-laying flight. They made this prediction without any reports from the trail party.

"We left immediately and had sunshine for the 440 miles to the mountains. The visibility is generally so bad here that without sunshine we probably could not have landed successfully to lay down our base.

Sunshine All the Way to the South Pole and Back

"A few days later, November 28, Haines reported the weather favorable for the South Pole flight and that it was possible we would not again get another day of such suitable weather. We left at once for the flight and had sunshine for practically the whole of the 1,600 miles. On December 5 the weather man reported that conditions were favorable for a flight to the eastward. We left at once and had good visibility all the way, which enabled us to photograph more than 50,000 square miles of unknown area.

"With bad visibility, flights in Antarctica are largely profitless.

"It is, in my opinion, remarkable that the weather predictions have been made so very accurately with so few facts available. Subsequent weather has emphasized the notability of the predictions.

"So it is clear that the contribution of the meteorological section to the success of our flights of exploration has been very great indeed.

"Haines and Harrison have also made valuable scientific records. They have made surface observations every hour, day and night, over a period of thirteen

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ing contains a huge Durbar hall, the walls and floors of which are decorated with Italian mosaic. Screened wooden galleries around the hall provide reserved seats for the ladies who wish to observe state functions.

Baroda Split into Four Districts

In 1926 the Gaekwar of Baroda celebrated the fiftieth anniversary of his coronation. In 1875 the ruler of the state was accused of an attempt to poison a British official and was deposed. The present ruler, a collateral relative, was a young lad when he ascended the throne in 1876. He was the son of a humble herdsman. He is one of only five Indian rulers entitled to receive a salute of twenty-one guns.

Baroda state has an area of 8,000 square miles but is "sprinkled" over 90,000 square miles. It is divided into four *prants* or districts. Each district includes a large area, with numerous small patches of land near by. One of these patches is 225 miles from the capital, on the easternmost tip of the Kathiawar peninsula.

Bulletin No. 1, April 7, 1930.

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SPINNING WOOL BY HAND IN KASHMIR

The wool which these women patiently spin goes into the rugs for which Kashmir is becoming famous and which are frequently seen in American stores. One of Gandhi's major policies has been to encourage the people of India to weave their own cloth. At present the largest import into India is cloth from Great Britain (See illustration facing Bulletin No. 1).

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A Tour Through a Daisy

HOW would you like to make a tour through a daisy?

Dr. William Joseph Showalter offers such a tour in a communication to the National Geographic Society.

"Let us reduce ourselves to the size of a molecule of water," he says, "and ramble through one of these cell cities we call a daisy, noting the hustle and bustle and industry constantly taking place.

"We promptly discover that one of the principal things going on is the manufacture, by the protoplasts, of a myriad tiny green grains which have been named chlorophyll. These grains have the power to screen out all the rays of light except the red and most of the blue, indigo, and violet series, which they use in their work.

Ninety Gallons of Carbon Dioxide To Make One Pound of Sugar

"Concentrating these useful rays on the stream of minute particles of carbon dioxide which come into the leaves through their pores or stomata, the chlorophyll breaks the carbon and oxygen apart and unites the carbon with water, which thereupon becomes grape sugar.

"In man's laboratories it takes a temperature of 1,300° C., enough to turn the hardest steel into liquid, to separate the carbon and oxygen atoms of the carbon dioxide molecules exhaled by animals and absorbed by plants. But the little laboratories of the cell city do it without difficulty, and in so doing fabricate the basic food of all organic life, grape sugar.

"To make a pound of the sugar, our guide tells us, the plant must work over nearly ninety gallons of carbon dioxide, in the extraction of which it has had to filter thousands of gallons of air. The sugar factory works from sunup to sundown, the eight-hour day being unknown there. But it operates only when the leaves are out.

Starch and Pig Iron

"How closely the sugar industry in the plant parallels the activities in a human factory is shown by the fact that the leaf corresponds to a building, the cells to the several rooms therein, the blue and red sunlight rays to the power employed, the chlorophyll to the machinery used, carbon dioxide and water to the raw material utilized, grape sugar to the manufactured product, and oxygen to the by-product.

"As we move along we see a constant stream of carbon dioxide particles rushing by, passing through the cell walls, where they meet the molecules of water. The chlorophyll grains turn their burning glasses with their red and blue rays upon the materials thus gathered into the retort and grape sugar is formed.

"After the chlorophyll grains have made the grape sugar, some new workers take it and transform it into starch, which is stored in cells for future use, just as the iron manufacturer converts his molten metal into pig iron, stores it, and melts it again when he wants to use it. A thousand square feet of leaf surface will manufacture one pound of starch in five hours of sunlight.

"The action of plants in storing up starch closely parallels that of business men in accumulating estates. Just as the business man invests his funds so that they will be available for conversion into ready money if he needs it, so the plant puts by its earnings in the form of starch ready for reconversion into the coin of its realm, sugar, if necessary. And just as the business man bequeaths his estate to his chil-

months. In the upper air they have made 400 pilot balloon runs to obtain the velocity and direction of wind at various levels. Many of these balloons have given wind data as high as 30,000 feet. Upper air humidity, pressure and temperature have been obtained by kite or airplane on forty days over a period of three months.

"I am glad to be able to report to you the splendid work done by your representatives.

"(Signed) Richard E. Byrd."

The Society Makes Money Grant for Scientific Work

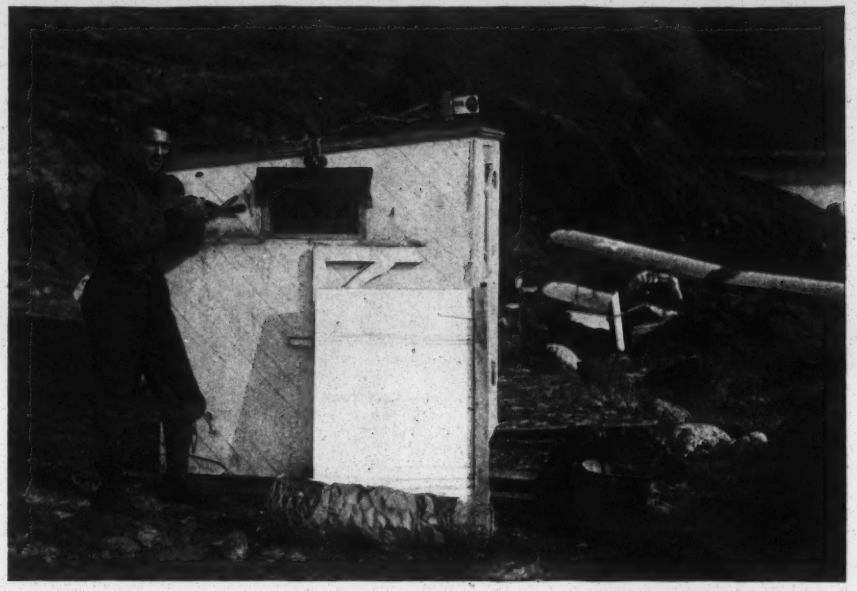
The technical men referred to in Rear Admiral Byrd's radio message are William C. Haines, meteorologist, whose salary is being defrayed by the National Geographic Society, which also allotted a $50,000 fund to the Byrd Expedition, and Henry T. Harrison, Jr., whose salary is being paid by the Guggenheim Fund.

The National Geographic Society contributed $25,000 toward the scientific work of the Byrd Expedition before its departure and, on November 23 last, Dr. Gilbert Grosvenor, president of The Society, radioed Byrd that "Our trustees and research committee have voted to double The Society's original grant, therefore award an additional $25,000, available when desired."

The entire amount of the National Geographic Society's contribution is being used in various phases of the scientific work being carried on by the expedition.

Bulletin No. 2, April 7, 1930.

Note: See also on the subject of weather and forecasting, "Toilers of the Sky," an article on the work of the clouds with illustrations showing classifications of clouds, *National Geographic Magazine*, August, 1925.



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WEATHER FORECASTERS ARE ESSENTIAL FOR POLAR AIR EXPEDITIONS

Chief Aërographer Francis took carrier pigeons to north Greenland when Admiral Byrd made his first flights in polar regions in connection with the MacMillan expedition under the auspices of the National Geographic Society in 1925. The aërographer, studying his instruments, gave the word that sent the planes soaring out over Ellesmere Island and Greenland's glaciers.

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American Fish Emigrants Welcomed by Every Continent

IN THE last five years the United States Government has presented nineteen foreign nations with gifts of American fish and fish eggs totalling more than 8,000,000.

The U. S. Bureau of Fisheries reports 8,191,525 fish eggs and 40,525 young fish shipped abroad since 1923.

North America is especially rich in fish species. The United States, for example, has four times as many varieties of fish as Europe, so it is understandable that other nations look to the United States for new fish stock.

"Good-Will Ambassadors" from American Streams

Long before the term "Good-Will Ambassador" was invented the United States Government established the practice of sending abroad representatives that have won the friendship of fishermen on every continent. The U. S. Bureau of Fisheries supplies the eggs of young fish free of charge from its hatcheries; foreign governments pay the cost of transportation.

So far as the Bureau can learn the American trout, bass, whitefish and salmon have won favor everywhere. The only exception is Argentina. One citizen of Argentina wrote a caustic letter to the effect that the American trout and bass had thrived so well that there were *too many of them*.

American game fish have proved most popular. The Rainbow Trout of the Western States now has an international reputation. The sport of the Rockies is now the sport of New Zealand, Switzerland, Germany, Italy, France and other countries.

Japan seeks American species in order to increase the food supply of her people. In 1926 and 1927 Japan transported a total of 4,700,000 eggs of the delicious Great Lakes Whitefish across the Pacific to be introduced in Lake Biwa and Lake Chuzenji.

Some Kinds Shipped When the Eggs Are "Eyed Out"

Certain American communities take pleasure in the knowledge that they have sent gifts in the name of the United States which will be appreciated by whole nations as long as rivers run. Orangeburg, S. C., collects and sends Gambusia minnows to eat mosquito larvae in Italy; Bozeman, Montana, shipped 50,000 Rainbow Trout eggs to Honolulu in 1925; while Meadow Creek, Montana, bestowed 50,000 similar eggs on grateful Netherlands.

Forty thousand Rainbow Trout eggs collected by the hatchery at White Sulphur Springs, West Virginia, were sent to the German Government Bureau of Fisheries, which distributed them to Prussia, Westphalia, Oldenburg, Thuringia, Bavaria, Wurttemburg, Baden and Austria.

Salmon, trout, whitefish and other varieties, the eggs of which take a long time to hatch, can be transported overseas in the egg. The usual practice is to wait until the eggs are "eyed out," that is, the formation of the eyes can be discerned. But with pond fish: bass, crappies, rock bass, and top minnows, species that hatch in a few days, the young fish must be shipped in buckets or tanks.

dren when he dies, so the plant transmits its surplus to its posterity when it passes.

"Men and animals have learned to rob the plant of its savings and its children of their patrimony by eating things rich in starch.

The Roots Are Pumps for the Water System

"A third material is made by the plant which is used in its building operations—inulin. It closely resembles starch, and is fabricated by another set of workers.

"While all these manufacturing activities are going on in the cell city we call a daisy, sap must also be provided, for without rich supplies of moisture and a tiny bit of mineral substance the wheels of industry of the community cannot revolve.

"So the roots act as pumps and bring into the city vast supplies of water with mineral in solution, in the proportion of a grain of minerals to a gill of water. This sap is pumped to every part of the plant and bathes the protoplasm of every cell, keeping the protoplasts moist and in high spirits."

Bulletin No. 3, April 7, 1930.

Note: For additional material see "The Book of Wild Flowers" (250 flowers in color), published by the National Geographic Society, and numerous articles on flowers listed in the Cumulative Index to the *National Geographic Magazine*.

© Photograph by Curtis and Muller

SOME FLOWERS DO NOT WAIT FOR THE SNOW TO DISAPPEAR

These plants are pushing through a disappearing snow bank in Mount Rainier National Park, Washington. Snow in winter is a friend of the flowers, serving them as a blanket while they sleep beneath the soil, awaiting the springtime's return.

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Nancy, Which Also Gives the Passion Play

THE giving of the Passion Play at Oberammergau, Germany, this year is attracting world-wide attention.

While Oberammergau's Passion Play has probably the longest and most remarkable history, it is not the only Passion Play. Such diverse communities as Nancy, France, and Bloomington, Illinois, also give the Passion Play.

Nancy is more often associated with war than with religion. It is one of the strategic strongholds of northeast France.

Stanislas, King of Poland, Left His Mark

Nancy, with more than 100,000 inhabitants, is an important junction point of railroads running from Paris eastward and from northern Europe to the Mediterranean. It lies due east of Paris about the same distance as New York City is from Washington, D. C.

Nancy began its long, eventful history as the site of the palace of the Dukes of Lorraine in the twelfth century, but the traveler is not long in the French city before he is aware that Stanislas Leczinski, former king of Poland and father-in-law of Louis XV, was the moving spirit in developing the city. The taxicabs from the railroad swing into the Rue Stanislas, a wide thoroughfare which nearly bisects Nancy. Near the center of the city the thoroughfare passes under the Porte Stanislas, an old arched gateway, and, several blocks beyond, terminates at Stanislas Square where a bronze statue of the Duke stands.

"Nancyites" and some travelers maintain that the square is one of the most beautiful in Europe. In two corners monumental fountains play, while here and there are gateways and balconies of grill work by artists of the eighteenth century. A theater building, a military club, the Grand Hotel, and the Hotel de Ville face the square. The latter now is a combination museum and art gallery. Its hallways are hung with paintings by leading European artists, and in some of its rooms are displayed tapestries, furniture, glass work and statuary that have figured in Nancy's history.

Tobacco and Textiles Figure Importantly

Within a stone's throw of the square the traveler passes through the Nancy Arc de Triomphe and into a maze of narrow winding streets which pass buildings that were old when Jamestown, Virginia, was first settled. This portion of the city was once surrounded by a high wall, of which only a few gates remain.

Nancy owes much of its development to the railroad junction, but throughout the city there are tobacco factories and textile and weaving mills. Each year the university and numerous schools of the city, as well as the Nancy Thermal, whose waters are sought by sufferers from rheumatism, gout and arthritis, bring many visitors.

Wherever the traveler may find himself in Nancy, he is seldom out of sight of a church tower or steeple. The guide points out this edifice as the place where Marie Antoinette once prayed at the altar, and that edifice as the place of burial of an important member of a European royal family. In the same tone, he points out the St. Epvre Church in the old town as the site of a church, in the tower of which 100 Burgundian officers were hanged in 1477 because they took the life of a Chamberlain of Lorraine.

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"Nursemaids" to Some Young Bass

The U. S. Bureau of Fisheries has studied and refined the methods of shipping live fish until it can now carry them long distances and through tropic waters with small loss. Two bureau men went as "nursemaids" to a shipment of young bass and crappies destined for Gatun Lake in the Canal Zone. They regularly aerated the tanks with fine streams of air from the ship's air compressor, and by the time the vessel reached Panama they had used four tons of ice to keep the bass and crappies cool. Only 38 out of 3,250 young fish died.

The development of air transportation, particularly the prospective Zeppelin trans-ocean service, opens up new possibilities in the transplantation of fish. Young fish were carried by air for the first time in 1928 when twenty cans were brought by plane from Northville, Michigan, to Dayton, Ohio, without loss. The Bureau has a plan on foot to carry eggs of the fresh-water smelt of Maine lakes to the west by air. This venture has been thwarted two years in succession through the failure to locate the eggs at the proper time.

Fish transplantation has not been all one way. The German Brown Trout and its cousin, the Loch Leven Trout, are both importations which have been very welcome in the United States. Many streams in New Jersey, which are no longer habitable by Brook Trout, now harbor the German Brown Trout.

German carp were introduced in the United States by the Fish Commission in 1877 and, although the newcomers were welcome at first, they later stirred up a storm of protest. Carp now constitute a very important American fishery.

Bulletin No. 4, April 7, 1930.

Note: See also "Our Heritage of the Fresh Waters," *National Geographic Magazine*, August, 1923, and "The Book of Fishes," published by the National Geographic Society.

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THE GREAT LAKES ARE RESERVOIRS OF FISH FOOD

A Lake Michigan power-fishing boat just in from the morning's work with the nets, Charlevoix, Michigan. Lake trout fill its crates. The trout are sent to local packing plants, frozen in ice shavings and then placed in cold storage until sold. Mid-west cities out of reach of the seaboard are familiar with the fresh fish of the Great Lakes.

During the World War, Nancy fared somewhat like Metz, whose church spires can be seen from the hills about Nancy, and St. Mihiel, where the American troops defeated a German army. Nancy residents were so accustomed to hearing shells and witnessing the devastation of their city by enemy gun fire that, within a few minutes after the city tocsins warned that the enemy had ceased bombardment, children emerged from their underground shelters and had their kites in the air.

Bulletin No. 5, April 7, 1930.

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PASSION PLAYERS OF TOMORROW GO RACING ON THEIR SKIS

At Oberammergau children of actors in the famous Biblical drama adapt the favorite Scandinavian sport to their own Bavarian mountains. To the winner of this race the Passion Play community awards a prize.

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